

IN THE CLAIMS:

1. A contact imaging system, comprising:

a light sensing element;

a transparent insulating layer overlaying said light sensing element;

a transparent electrode layer overlaying said transparent insulating layer;

5 a luminescence layer overlaying said transparent electrode layer; and

a stray light shield layer overlaying said luminescence layer, wherein the luminescence layer and the electrode layer are configured such that an electric field can be applied between an object to be imaged and said transparent electrode layer.

2. The contact imaging system according to claim 1, further comprising a transparent adhesive disposed between said light sensing element and said transparent insulating layer.

3. The contact imaging system according to claim 1, wherein said light sensing element comprises a PN junction diode.

4. The contact imaging system according to claim 3, wherein said PN junction diode comprises:

a lower electrode;

an N-type silicon layer overlaying said lower electrode;

an intrinsic silicon layer overlaying said N-type silicon layer;
a P-type silicon layer overlaying said intrinsic silicon layer; and,
a transparent electrode overlaying said P-type silicon layer.

5. The contact imaging system according to claim 4, wherein said PN junction diode is configured to be biased by a reversed direction voltage.

6. The contact imaging system according to claim 1, wherein said light sensing element comprises a charge coupled device.

7. The contact imaging system according to claim 1, wherein said light sensing element comprises a complementary metal oxide semiconductor (CMOS) image sensor.

8. The contact imaging system according to claim 1, wherein said light sensing element comprises a photo transistor.

9. The contact imaging system according to claim 1, wherein said light sensing element comprises a position sensitive detector.

10. The contact imaging system according to claim 1, wherein said light sensing element comprises a camera.

11. The contact imaging system according to claim 1, wherein said light sensing element comprises a scanner.

12. The contact imaging system according to claim 1, wherein said luminescence layer includes a dark pigment that acts to enhance contrast.

13. The contact imaging system according to claim 12, further comprising a penetrating control layer formed between said luminescence layer and said stray light shield layer, wherein said stray light shield layer includes a dark pigment, and wherein said penetrating control layer is configured to limit an amount of said dark pigment that passes from said stray light shield layer to said luminescence layer.

14. The contact imaging system according to claim 13, wherein said stray light shield layer comprises:

a first layer adjacent the penetrating control layer that includes said dark pigment; and

5 a second layer overlying said first layer, wherein said second layer is configured to block exterior light.

15. The contact imaging system according to claim 1, wherein said light sensing elements comprises a two dimensional array of light sensing elements.

16. A contact imaging system, comprising:
a light sensing element;
a transparent insulating layer overlaying said light sensing element;
a transparent electrode layer overlaying said transparent insulating layer;
a luminescence layer overlaying said transparent electrode layer; and
a protective layer overlaying said luminescence layer, wherein said luminescence layer and said electrode layer are configured such that an electric field can be applied between an object to be imaged and said transparent electrode layer.

17. The contact imaging system according to claim 16, wherein said light sensing element comprises a PN junction diode.

18. The contact imaging system according to claim 17, wherein said PN junction diode comprises:

a lower electrode;
an N-type silicon layer overlaying said lower electrode;
an intrinsic silicon layer overlaying said N-type silicon layer;
a P-type silicon layer overlaying said intrinsic silicon layer; and,
a transparent electrode overlaying said P-type silicon layer.

19. The contact imaging system according to claim 17, wherein said PN junction diode is configured to be biased by a reversed direction voltage.

20. The contact imaging system according to claim 16, wherein said light sensing element comprises a charge coupled device.

21. The contact imaging system according to claim 16, wherein said light sensing element comprises a complementary metal oxide semiconductor image sensor.

22. The contact imaging system according to claim 16, wherein said light sensing element comprises a photo transistor.

23. The contact imaging system according to claim 16, wherein said light sensing element comprises a position sensitive detector.

24. The contact imaging system according to claim 16, wherein said light sensing element comprises a camera.

25. The contact imaging system according to claim 16, wherein said light sensing element comprises a scanner.

26. The contact imaging system according to claim 16, wherein said protective layer is hydrophobic.

27. The contact imaging system according to claim 16, wherein said protective layer is abrasion resistant.

28. The contact imaging system according to claim 16, further comprising a shield layer disposed between said protective layer and said luminescence layer, wherein said shield layer is configured to block exterior light.

29. A contact imaging system comprising:

a light sensing element;

a transparent insulating layer overlaying said light sensing element;

a transparent electrode layer overlaying said transparent insulating layer; and

a luminescence layer overlaying said transparent electrode layer, wherein the electrode layer is configured such that an electric field can be applied between an object to be imaged and said transparent electrode layer, and wherein said electric field causes said luminescence layer to luminesce when the object to be imaged is brought adjacent to said luminescence layer.

30. The contact imaging system according to claim 29, further comprising a transparent adhesive disposed between said light sensing element and said transparent insulating layer.

31. The contact imaging system according to claim 29, wherein said light sensing element comprises a PN junction diode.

32. The contact imaging system according to claim 31, wherein said PN junction diode comprises:

a lower electrode;

an N-type silicon layer overlaying said lower electrode;

an intrinsic silicon layer overlaying said N-type silicon layer;

a P-type silicon layer overlaying said intrinsic silicon layer; and,

a transparent electrode overlaying said P-type silicon layer.

33. The contact imaging system according to claim 29, wherein said light sensing element comprises a charge coupled device.

34. The contact imaging system according to claim 29, wherein said light sensing element comprises a complementary metal oxide semiconductor image sensor.

35. The contact imaging system according to claim 29, wherein said light sensing element comprises a photo transistor.

36. The contact imaging system according to claim 29, wherein said light sensing element comprises a position sensitive detector.

37. The contact imaging system according to claim 29, wherein said light sensing element comprises a camera.

38. The contact imaging system according to claim 29, wherein said light sensing element comprises a scanner.

39. The contact imaging system of claim 29, further comprising:
a shield layer that includes a dark pigment; and

a penetrating control layer located between said shield layer and said luminescence layer, wherein said penetrating control layer is configured to limit an amount of the dark pigment in the shield layer that migrates to the luminescence layer.

40. The contact imaging system of claim 39, further comprising a protective layer overlaying the shield layer, wherein the protective layer is abrasion resistant and repels moisture.